DRAFT

Staff Study

1. Problem

To examine current ORR deficiencies in basic geo-science research and recommend a program for their correction.

2. Facts bearing on the problem

a. In NSCID No. 15 the Director of Central Intelligence is charged with (1) a continuing review of requirements -- for foreign economic intelligence relating to the national security, (2) to evaluate -- the pertinence, extent and quality of foreign economic data, and (3) to improve the quality thereof and (4) conduct, as a service of common concern, foreign economic research required to supplement that produced by other agencies.

b. The nature, quality, and size of the natural resource base -- water, land, and minerals and fuels -- materially affect the economic potential of a given country. (Tab A)

c. The determination of the economic and military capabilities of the Soviet Bloc requires the preparation of a realistic appraisal of the broad ranges of past, current and projected surveying and exploration activities that underlie the location and inventorying of natural resources.

d. A basic factor in the planned industrialization of the Soviet Union, and now the remainder of the Soviet Bloc, has been the primary emphasis on resource exploration and mapping. Yet this vast activity has not been systematically recorded and evaluated in intelligence research for use as a datum in the determination of the objectives, purposes, and significance of current and future activities.

e. Under NSCID Directive No. 3, par. 3, economic, scientific, and technological intelligence production is permissible by each agency as needed. Accordingly, economic intelligence production is conducted not only by CIA, but also by the three services of the Department of Defense, and the Department of State. The latter still retains primary responsibility for basic intelligence under the NIS program even though it has given up its capabilities for such production. As a result, its intelligence production has been delegated to the non-IAC agencies of the Departments of Interior and Agriculture who have no intelligence focus and maintain no intelligence continuity in their research program.

f. Notwithstanding the multiplicity of effort in economic research, no governmental component is engaged in the study and appraisal of water resources relative to the agricultural, industrial, transportational, and human requirements of the Sov Bloc.

g. Intelligence research and production of the Geophysics Branch, P&E, OSI, excludes any consideration of the activities of Sov Bloc organizations and personnel in the quantitative and area application of their methods and instrumentation in surveying, prospecting, exploration, and field investigations in the geo-sciences.

h. The harsh physical environment of Eurasia imposes unique or unusual difficulties in the deployment and logistics of the communist military forces in Eurasia. In addition to research, exploration, surveying and mapping for natural resources, communist regional environmental research is directed to the solution of problems in the coping with adverse physical

conditions and in adapting to the environment for military purposes. Up to the present time the intelligence community has neither produced the requisite basic intelligence (c.f. par. and) nor is any part of it currently engaged in the collation and integration of current information on all known Soviet activities in the geo-sciences for the identification of militarily- or strategically-motivated regional environmental research, exploration, and surveying and mapping.

3. Discussion

a. The appraisal of the natural resource base of a country is dependent upon a thorough tabulation, collation, and appraisal of those survey and field activities that relate to the discovery, location, and the qualitative and quantitative measurement of resource reserves. Communist geo-scientific activities particularly lend themselves to intelligence research. As a matter of basic policy terrestrial research, prospecting, exploration, and surveying and mapping has always preceded industrial development. These activities, like all others, have been subject to centralized planning and control. This offers a compensatory factor to the security restrictions that would otherwise seriously diminish a reconstruction of communist plans, objectives, achievements and failures in environmental research and development.

b. Every significant economic development project where site or natural resources are involved, or where military facilities are built, is preceded by (1) activities that contribute to national and regional planning based on various types of field studies of the physical environment,

and (2) one or more forms of detailed exploration, prospecting, testing, measuring, and observing local conditions, followed, finally, by some form of detailed surveying and mapping. Through a careful analysis, classification, and collation of information, basic intelligence can be obtained to aid in identifying the type and location of industrial and military developments.

c. Natural resources vary widely in space, and time. They are not uniformly distributed throughout the Earth's crust, or on its surface, and are subject to exhaustion, depletion, renewability, new discoveries, and to ever-changing industrial and agricultural technologies. No estimate of current economic and military capabilities, and of future potentials are realistic unless these variables in the resource base are kept under constant surveillance and appraisal.

d. Knowledge of the quality and quantity of a resource base is fundamentally related to the extent of surveying and field research. The resources of an area -- water, land, minerals, and fuels -- in a modern industrial society cannot be determined or measured without prior exploration, prospecting, and surveying and mapping. On the other hand, reliable estimates of resources may be made from resource data known to have been surveyed in detail with the most modern methods and instruments. Thus the basic key to the estimation of the resource of a country rests not only on the number and quality of its scientists, instruments, and methods, but more on the areal extent of completed surveying and field research, and its correlation with current economic production and strategic military requirements.

e. Changes in the resource base due to exhaustion, depletion, and new discoveries are at some point derivable only from a systematic recording and analysis of Sov Bloc surveying and field and theoretical research collated with known commercial exploitation activities.

f. The extent and quality of the Sov Bloc resource base, and its current and potential value to the Sov Bloc economy can only be determined by a comparison of available resource data against the known extent and quality of Sov Bloc surveying, mapping, and field and office research. Inadequate information on the status of Sov Bloc surveying renders it impossible to determine the representativeness and currency of a given piece of information concerning the resource itself. The problem is particularly troublesome in the case of the USSR. US industrial and food production estimates of the Soviet Union are based largely on pre-war (WWII) data that have been obtained from only a partially surveyed and mapped portion of the total Soviet Union. These data are not representative of the currently-surveyed USSR and will be less so as Soviet surveying and field research increases in area, and improves in detail and from the application of modern methods. Such economic estimates, therefore, represent only a fraction of the total information that represents the current Soviet economy. It may well be that the recent US intelligence deficiencies in anticipating Soviet aircraft development stem in part from an underestimation of the Soviet natural resource base.

g. In the absence of a basic and comprehensive summary of the status of Soviet achievements and deficiencies in areal surveying and field

research is lacking. There is, therefore, no reliable standard by which US-held resource data can be assessed as to their representativeness. Moreover, current all-source bits of information cannot be evaluated as to their meaning and value to future Soviet capabilities.

h. After 13 years of US intelligence research on the USSR (dating from the organization of the USSR Division, Research and Analysis Branch, OSS) the Materials Division found it necessary in 1954 to initiate a project with the US Geological Survey to prepare a geologic report on the Ural-Volga oil region. This study and other geologic and hydrologic research has been undertaken by the USGS for the Agency in the period of FY 1952-55 amounting to an expenditure of 25X1A1a [redacted] of which 25X1A1a [redacted] was for the account of OSI.

i. Military deployment and logistics in the USSR are confronted with problems of the physical environment. Practical field research, exploration, and surveying are essential activities in the development of military facilities and in the solution of problems related to the extreme conditions of the physical environment. Through a tabulation, collation and analysis of environmental research, surveying field exploration, and mapping, it is planned to (1) identify possible locations of centers or sites of development, (2) establish vulnerabilities of such facilities, and (3) estimate the extent of Soviet success or failure in development from the environmental viewpoint.

4. Conclusions

a. Intelligence estimates of Sov Bloc economic and military capabilities, current and projected, are seriously hampered by the inadequacy of basic intelligence on current and projected Sov Bloc activities in physical environmental research, exploration and mapping resource data available to the West.

b. Current and future all-source information on Soviet explorations and field activities cannot be explicitly evaluated since there is no evaluated basic framework of known Soviet resource problems, objectives, and achievements in exploration and field research. As a result, such current information cannot be adequately categorized, evaluated, and fully utilized to reveal current Sov Bloc problems, objectives, and future economic capabilities.

c. Intelligence production by non-IAC contractors (Bureau of Mines, US Geological Survey) is incomplete and divorced from any program for continuing systematic surveillance. Moreover, such work has not benefitted from all-source collation by uncleared non-IAC personnel engaged in the work.

d. Tab B outlines in biref form a program of basic intelligence research in the fields of geology, geomorphology, climatology, soil science, and physical geography.

Tab B

A Proposed Intelligence Research Program in the Geo-Sciences

I. Mission

The proposed Division of Geo-Science Research in the Geographic Research Area will:

A. Produce basic intelligence on Sov Bloc activities in geology, geophysics, hydrology, climatology, physical geography, and geodesy and cartography as they relate to economic activities and strategic objectives.

B. Coordinate activities and intelligence requirements and intelligence production within the Agency, and among the various components of the Department of Defense (Army, Air, and Navy) and the Department of State engaged in these fields.

C. Provide intelligence contributions on the geo-science activities of the Sov Bloc as required for NIE's, Current Intelligence publications, and such other production as may be required.

II. The Research Program

A. The proposed Division will engage in research to determine the areal extent, depth, and quality of Sov Bloc field surveys, expeditions, and field research in the above-mentioned fields as related to mineral and fuel resource exploration and economic development, to agricultural land use, to hydroelectric power production, and to the water economy for industrial and agricultural requirements.

B. Intelligence production will include

1. The reconstruction of the history of surveying, prospecting, mapping, land-use development, and water measurement and analysis by

a. Region

b. Purpose or objectives of the investigation or exploration

c. Type of investigation (e.g. magnetometric, gravimetric, seismic, etc.)

d. Sponsoring and participating institutions and personnel.

2. The preparation of a series of basic regional analyses providing an appraisal of the distinctive character of the region, its unique problems, the known extent of the surveying or other related field investigation, and the adequacy of such field activity relative to the needs or attributes of the region. Stress will be laid on deficiencies with an estimate of future goals and plans that might be required for economic or strategic military development.

3. The production of current intelligence that will classify and evaluate the nature, objectives, and significance of current and future surveys, field investigations, changes in land use, expansion in mapping as they relate to economic and strategic military development.

4. The production of intelligence on new developments in methods and instrumentation in the geo-sciences will be directed to (1) an appraisal of their impact on Sov Bloc effectiveness in coping with physical environmental problems, (2) to an identification and delineation of activities having military significance or implications, and (3) the

selection of possible or probable location of sites or regions for a given military purpose or activity.

III. The phasing of research and intelligence production

It is proposed to divide the research into a basic and a current phase, in order that a desirable telescoping of time may be achieved. Both phases would become operative simultaneously.

A. The basic phase

In order to expedite research and production it is proposed to establish an external research contract with the Department of Interior so as to benefit from the topical specialists in geology, hydrology, and land management available therein. Since the basic phase will primarily be concerned with unclassified Sov Bloc source materials in the Department of the Interior Library, the Library of Congress, and the New York Public Library, it would obviate the need for security clearances and thus eliminate associated delays. It is estimated that this program will require a three-year program at the rate of [redacted] per year.

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B. The current phase

Simultaneously with the basic phase, the proposed Division of Geo-Science Research will undertake current research, taking up from a cut-off date set up for the Basic Phase.

The following staff is proposed for the Division:

3 Geologists; one each for the USSR, China, and the European Satellites.

2 Hydrologists; one each for the USSR and China.

2 Climatologists; one each for the USSR and China.

2 Physical Geographers (soil scientists); one each for the USSR and China.

1 Geodesist; to cover the entire Sov Bloc area.

1 Geomagnetist; to cover the entire Sov Bloc area.

C. It is recommended that the staffing of the proposed Division be achieved by a transfer of the Slots and personnel from the Geophysics Branch, P&E, OSI.